Air Quality Permit

Issued To: NorthWestern Montana First Megawatts, LLC
125 S. Dakota Avenue
Sioux Falls, SD 57104-6403

Permit #3154-02
Application Complete0 5/28/02
Preliminary Determination Issued: 07/03/02
Department Decision Issued: 07/25/02
Permit Final: 08/10/02
AFS Number: 013-0033

An air quality permit, with conditions, is hereby granted to NorthWestern Montana First Megawatts, LLC (NorthWestern) pursuant to Sections 75-2-204 and 211, Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8.701, *et seq*., as amended, for the following:

Section I: Permitted Facilities

A. Plant Location

NorthWestern proposed to construct and operate a 262-megawatt (MW) natural gas fired electrical power generation facility approximately 2 miles north of Great Falls, Montana, and east of U.S. Highway 87. The legal description of the site location is Section 30, Township 21 North, Range 4 East, in Cascade County, Montana. A complete list of the permitted equipment for the natural gas fired 262-MW electrical power generation facility is contained in the permit analysis.

B. Current Permit Action

On May 28, 2002, the Department of Environmental Quality (Department) received a request from NorthWestern to alter Permit #3154-01 for the potential to add a heat recovery steam generator (HRSG) to each of the existing 80-megawatt (MW) natural gas-fired simple cycle combustion turbines. The addition of the HRSG's converts the simple cycle turbines into combined cycle systems. The exhaust heat generated from the simple-cycle turbines will produce steam, which will drive a steam turbine. NorthWestern anticipates an additional 102 MW of power generation from the installation of the two HRSG's and one steam turbine, for a total of 262 MW from the facility.

Section II: Limitations and Conditions – Simple Cycle

A. Emission Limitations and Control Requirements

1. Emissions from each of the two 80 MW natural gas powered turbines shall not exceed the following limits:

| | |
|---|---|
| $NO_x$ (during times other than peak load) | 40.0 lb/hr (ARM 17.8.715) |
| $NO_x$ (during times of peak load) | 120.0 lb/hr (ARM 17.8.715) |
| CO | 27.0 lb/hr (ARM 17.8.710) |
| $PM_{10}$ | 10.0 lb/hr (ARM 17.8.710) |

2. The hours of operation, at peak load, for each of the two turbines shall not exceed 500 hours during any rolling 12-month time period (ARM 17.8.710).

3. Peak load shall be defined as the combustion mode when the internal combustion turbine firing temperature is increased by more than 100.0°F above the nominal 100% baseload combustion firing temperature. The firing temperature is a combination of measured and calculated results to determine the true firing temperature in the combustion liner.

4. NorthWestern shall limit the hours of operation, the capacity, and/or the natural gas consumption of the two turbines such that the sum of the $NO_x$ emissions from the facility is less than 100 tons per rolling 12-month time period. Any calculations used to establish $NO_x$ emissions shall be approved by the Department and shall be based on the $NO_x$ data from the continuous emission monitor system (CEMS) for each turbine (ARM 17.8.710).

5. NorthWestern shall limit the hours of operation, the capacity, and/or the natural gas consumption of the two turbines such that the sum of the CO emissions from the facility is less than 97.5 tons per rolling 12-month time period. Any calculations used to establish CO emissions shall be approved by the Department and shall be based on the average hourly temperature from the National Weather Service office in Great Falls and the average hourly load for each turbine (ARM 17.8.710).

6. NorthWestern shall limit the hours of operation, the capacity, and/or the natural gas consumption of the two turbines such that the sum of the PM and $PM_{10}$ emissions from the facility is less than 100 tons per rolling 12-month time period. Any calculations used to establish PM and $PM_{10}$ emissions shall be approved by the Department (ARM 17.8.710).

7. NorthWestern shall only combust pipeline quality natural gas in the compressor turbines (ARM 17.8.710).

8. NorthWestern shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

9. NorthWestern shall not cause or authorize emissions to be discharged into the atmosphere from haul roads, access roads, parking lots, or the general plant property without taking reasonable precautions to control emissions of airborne particulate matter (ARM 17.8.308).

10. NorthWestern shall treat all unpaved portions of the access roads, parking lots, and general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the reasonable precautions limitation in Section II.A.9 (ARM 17.8.710).

11. NorthWestern shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements contained in 40 CFR 60, Subpart GG (ARM 17.8.340 and 40 CFR 60, Subpart GG).

12. NorthWestern shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements of the Acid Rain Program contained in 40 CFR 72-78 (40 CFR 72 through 40 CFR 78).

13. The requirements of Section II of this permit shall only apply until the NorthWestern facility constructs and begins operating in a combined cycle mode (ARM 17.8.710).

14. Upon commencement of operation in the combined cycle mode, NorthWestern shall comply with the conditions identified in Section III of this permit (ARM 17.8.710).

B. Testing Requirements

1. NorthWestern shall test each of the two 80 MW simple cycle turbines for $NO_x$ and CO, concurrently, within 180 days of initial start-up of the respective simple cycle turbine, or according to another testing/monitoring schedule as may be approved by the Department, to demonstrate compliance with the $NO_x$ and CO emission limits contained in Section II.A.1. The testing of each simple cycle turbine shall continue on an every 2-year basis, or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.105 and 17.8.710).
2. NorthWestern shall test each of the two 80 MW simple cycle turbines for $PM_{10}$ within 180

days of initial start-up of the respective simple cycle turbine, or according to another testing/monitoring schedule as may be approved by the Department, to demonstrate compliance with the $PM_{10}$ emission limit contained in Section II.A.1. The testing of each simple cycle turbine shall continue on an every 5-year basis, or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.105 and 17.8.710).

3. All compliance source tests shall be conducted in accordance with the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

4. The Department may require additional testing (ARM 17.8.105).

C. Operational Reporting Requirements

1. NorthWestern shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in Section I of the permit analysis.

   Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. Information shall be in the units required by the Department. This information may be used for calculating operating fees based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505).

2. NorthWestern shall document, by hour, the internal combustion turbine firing temperature and the nominal 100% baseload combustion firing temperature. NorthWestern shall also identify those times when the internal combustion firing temperature exceeds the nominal 100% baseload combustion firing temperature by more than 100.0°F (ARM 17.8.710).

3. NorthWestern shall document, by month, the hours of operation, at peak load, for each of the two simple cycle turbines. By the 25th day of each month, NorthWestern shall total the hours of operation for each of the simple cycle turbines, at peak load, during the previous 12-months to verify compliance with the limitation in Section II.A.2. A written report, including the previous 12-month total combined hours of operation at peak load for the turbines, shall be submitted annually to the Department no later than March 1 and may be submitted along with the annual emission inventory (ARM 17.8.710).

4. NorthWestern shall document, by month, the amount of $NO_x$ emissions from the facility. By the 25th day of each month, NorthWestern shall total the $NO_x$ emissions from the facility to verify compliance with the limitation in Section II.A.4. A written report, including the previous 12-month total of $NO_x$ emissions from the facility, shall be submitted annually to the Department no later than March 1 and may be submitted along with the annual emission inventory (ARM 17.8.710).

5. NorthWestern shall document, by month, the amount of CO emissions from the facility. By the 25th day of each month, NorthWestern shall total the CO emissions from the facility to verify compliance with the limitation in Section II.A.5. A written report, including the previous 12-month total of CO emissions from the facility, shall be submitted annually to the Department no later than March 1 and may be submitted along with the annual emission inventory (ARM 17.8.710).

6. NorthWestern shall document, by month, the amount of PM and $PM_{10}$ emissions from the facility. By the 25th day of each month, NorthWestern shall total the PM and $PM_{10}$ emissions from the facility to verify compliance with the limitation in Section II.A.6. A written report, including the previous 12-month total of Pm and $PM_{10}$ emissions from the facility, shall be submitted annually to the Department no later than March 1 and may be submitted along with

the annual emission inventory (ARM 17.8.710).

7. NorthWestern shall notify the Department of any construction or improvement project conducted pursuant to ARM 17.8.705(1)(r) that would include a change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation or the addition of a new emission unit. The notice must be submitted to the Department, in writing, 10 days prior to start up or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.705(1)(r) (iv) (ARM 17.8.705).

8. The records compiled in accordance with this permit shall be maintained by NorthWestern as a permanent business record for at least 5 years following the date of the measurement, shall be submitted to the Department upon request, and shall be available at the plant site for inspection by the Department (ARM 17.8.710).

9. NorthWestern shall annually certify that its actual emissions are less than those that would require the source to obtain an air quality operating permit as required by ARM 17.8.1204 (3)(b). The annual certification shall comply with requirements of ARM 17.8.1207. The annual certification shall be submitted along with the annual emission inventory information (ARM 17.8.1204 (3)(b) and ARM 17.8.1207).

D. Notification

NorthWestern shall provide the Department with written notification of the following dates within the specified time periods (ARM 17.8.710):

1. Commencement of construction of the power generation facility within 30 days after commencement of construction;

2. Actual start-up date of the first 80 MW turbine within 15 days after the actual start-up of the turbine; and

3. Actual start-up date of the second 80 MW turbine within 15 days after the actual start-up of the turbine.

Section III: Limitations and Conditions – Combined Cycle

A. Emission Limitations and Control Requirements

1. NorthWestern shall operate and maintain an SCR unit in addition to the integral dry low $NO_x$ burner on each of the 131 MW natural gas powered combined cycle turbine/heat recovery steam generator (HRSG) stacks (ARM 17.8.710).

2. NorthWestern shall operate and maintain an oxidation catalyst on each of the 131 MW natural gas powered combined cycle turbine/HRSG stacks (ARM 17.8.710).

3. Emissions from each of the 131 MW natural gas powered turbine/HRSG stacks shall not exceed the following limits:

| | |
|---|---|
| $NO_x$ | 49.97 lb/hr (ARM 17.8.710) |
| CO | 37.97 lb/hr (ARM 17.8.710) |
| $PM_{10}$ | 11.23 lb/hr (ARM 17.8.710) |

4. NorthWestern shall limit the hours of operation, the capacity, and/or the natural gas consumption of the two turbines such that the sum of the $NO_x$ emissions from the facility is less than 100 tons per rolling 12-month time period. Any calculations used to establish $NO_x$ emissions shall be

approved by the Department and shall be based on the $NO_x$ data from the CEMS for each turbine (ARM 17.8.710).

5. NorthWestern shall limit the hours of operation, the capacity, and/or the natural gas consumption of the two turbines such that the sum of the CO emissions from the facility is less than 97.5 tons per rolling 12-month time period. Any calculations used to establish CO emissions shall be approved by the Department and shall be based on the average hourly temperature from the National Weather Service office in Great Falls and the average hourly load for each turbine (ARM 17.8.710).

6. NorthWestern shall limit the hours of operation, the capacity, and/or the natural gas consumption of the two turbines such that the sum of the PM and $PM_{10}$ emissions from the facility is less than 100 tons per rolling 12-month time period. Any calculations used to establish PM and $PM_{10}$ emissions shall be approved by the Department (ARM 17.8.710).

7. NorthWestern shall limit the combined hours of operation of the two duct burners to no more than 10,000 hours per rolling 12-month time period (ARM 17.8.710).

8. NorthWestern shall limit the hours of operation of the emergency water pump to no more than 500 hours per rolling 12-month time period (ARM 17.8.710).

9. NorthWestern shall only combust pipeline quality natural gas in the compressor turbines (ARM 17.8.710).

10. NorthWestern shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

11. NorthWestern shall not cause or authorize emissions to be discharged into the atmosphere from haul roads, access roads, parking lots, or the general plant property without taking reasonable precautions to control emissions of airborne particulate matter (ARM 17.8.308).

12. NorthWestern shall treat all unpaved portions of the access roads, parking lots, and general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the reasonable precautions limitation in Section II.A.11 (ARM 17.8.710).

13. NorthWestern shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements contained in 40 CFR 60, Subpart GG (ARM 17.8.340 and 40 CFR 60, Subpart GG).

14. NorthWestern shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and the notification requirements contained in 40 CFR 63, Subpart Q (ARM 17.8.342 and 40 CFR 63, Subpart Q).

15. NorthWestern shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements of the Acid Rain Program contained in 40 CFR 72-78 (40 CFR 72 through 40 CFR 78).

B. Testing Requirements

1. NorthWestern shall test each of the two combined cycle turbines for $NO_x$ and CO, concurrently, within 180 days of initial start-up of the respective combined cycle turbine, or according to another testing/monitoring schedule as may be approved by the Department, to demonstrate compliance with the $NO_x$ and CO emission limits contained in Section III.A.3. The testing of each turbine shall continue on an every 2-year basis, or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.105 and 17.8.710).
2. NorthWestern shall test each of the two combined cycle turbines for $PM_{10}$ within 180 days of initial start-up of the respective combined cycle turbine, or according to another testing/monitoring schedule as may be approved by the Department, to demonstrate

compliance with the $PM_{10}$ emission limit contained in Section III.A.3. The testing of each turbine shall continue on an every 5-year basis, or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.105 and 17.8.710).

3. All compliance source tests shall be conducted in accordance with the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

4. The Department may require additional testing (ARM 17.8.105).

C. Operational Reporting Requirements

1. NorthWestern shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in Section I of the permit analysis.

   Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. Information shall be in the units required by the Department. This information may be used for calculating operating fees based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505).

2. NorthWestern shall document, by month, the amount of $NO_x$ emissions from the facility. By the 25th day of each month, NorthWestern shall total the $NO_x$ emissions from the facility to verify compliance with the limitation in Section III.A.4. A written report, including the previous 12-month total of $NO_x$ emissions from the facility, shall be submitted annually to the Department no later than March 1 and may be submitted along with the annual emission inventory (ARM 17.8.710).

3. NorthWestern shall document, by month, the amount of CO emissions from the facility. By the 25th day of each month, NorthWestern shall total the CO emissions from the facility to verify compliance with the limitation in Section III.A.5. A written report, including the previous 12-month total of CO emissions from the facility, shall be submitted annually to the Department no later than March 1 and may be submitted along with the annual emission inventory (ARM 17.8.710).

4. NorthWestern shall document, by month, the amount of PM and $PM_{10}$ emissions from the facility. By the 25th day of each month, NorthWestern shall total the PM and $PM_{10}$ emissions from the facility to verify compliance with the limitation in Section III.A.6. A written report, including the previous 12-month total of PM and $PM_{10}$ emissions from the facility, shall be submitted annually to the Department no later than March 1 and may be submitted along with the annual emission inventory (ARM 17.8.710).

5. NorthWestern shall document, by month, the total combined hours of operation of the HRSG duct burners. By the 25th day of each month, NorthWestern shall total the combined hours of operation of the HRSG duct burners during the previous 12 months to verify compliance with the limitation in Section III.A.7. A written report, including the previous 12-month total hours of operation of each HRSG duct burner, shall be submitted annually to the Department no later than March 1 and may be submitted along with the annual emission inventory (ARM 17.8.710).

6. NorthWestern shall document, by month, the total hours of operation of the emergency water pump. By the 25th day of each month, NorthWestern shall total the hours of operation of the emergency water pump during the previous 12 months to verify compliance with the limitation in Section III.A.8. A written report, including the previous 12-month total hours of operation of the emergency water pump, shall be submitted annually to the Department no later than March 1 and may be submitted along with the annual emission inventory (ARM 17.8.710).

7. NorthWestern shall notify the Department of any construction or improvement project conducted pursuant to ARM 17.8.705(1)(r) that would include a change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation or the addition of a new emission unit. The notice must be submitted to the Department, in writing, 10 days prior to start up or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.705(1)(r) (iv) (ARM 17.8.705).

8. The records compiled in accordance with this permit shall be maintained by NorthWestern as a permanent business record for at least 5 years following the date of the measurement, shall be submitted to the Department upon request, and shall be available at the plant site for inspection by the Department (ARM 17.8.710).

9. NorthWestern shall annually certify that its actual emissions are less than those that would require the source to obtain an air quality operating permit as required by ARM 17.8.1204 (3)(b). The annual certification shall comply with requirements of ARM 17.8.1207. The annual certification shall be submitted along with the annual emission inventory information (ARM 17.8.1204(3)(b) and ARM 17.8.1207).

D. Notification

NorthWestern shall provide the Department with written notification of the following dates within the specified time periods (ARM 17.8.710):

1. Commencement of construction of the HRSG units within 30 days after commencement of construction;

2. Actual start-up date of each of the two 131 MW turbines/HRSG units within 15 days after the actual start-up of each turbine/HRSG unit.

Section IV: General Conditions

A. Inspection - The recipient shall allow the Department's representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

B. Waiver - The permit and all the terms, conditions, and matters stated herein shall be deemed accepted if the recipient fails to appeal as indicated below.

C. Compliance with Statutes and Regulations - Nothing in this permit shall be construed as relieving any permittee of the responsibility for complying with any applicable federal or Montana statute, rule or standard, except as specifically provided in ARM 17.8.701, *et seq.* (ARM 17.8.717).

D. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement as specified in Section 75-2-401, *et seq.*, MCA.

E. Appeals - Any person or persons jointly or severally adversely affected by the Department's decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefore, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The Department's decision on the application is not final unless 15 days have elapsed and there is no request for a hearing under this section. The filing of a request for a hearing postpones the effective date of the Department's decision until the conclusion of the hearing and issuance of a

final decision by the Board.

F. Permit Inspection - As required by ARM 17.8.716, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by Department personnel at the location of the permitted source.

G. Construction Commencement - Construction must begin within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall be revoked.

H. Permit Fees - Pursuant to Section 75-2-220, MCA, as amended by the 1991 Legislature, the continuing validity of this permit is conditional upon the payment by the permittee of an annual operation fee, as required, by that section and rules adopted thereunder by the Board.

Permit Analysis
NorthWestern Montana First Megawatts, LLC
Permit #3154-02

I. Introduction/Process Description

A. Permitted Equipment

On May 28, 2001 a complete permit application was submitted by NorthWestern Montana First Megawatts, LLC (NorthWestern) for an alteration of Permit #3154-01 to install and operate two 131 megawatt (MW) General Electric PG7121EA combined cycle gas turbines, and two associated heat recovery steam generators (HRSG) to produce electrical power. Emissions of $NO_x$ will be controlled by dry low $NO_x$ combustors that are integral to the design of the PG7121EA turbines and by selective catalytic reduction (SCR) units installed on each turbine. Emissions of CO will be controlled by a catalytic oxidizer. NorthWestern will also install and operate a 102 MW steam turbine and associated cooling tower. The natural gas fired 262 MW electrical power facility will operate at the legal location of Section 30, Township 21 North, Range 4 East, approximately 2 miles north of Great Falls, Montana.

B. Source Description

A gas turbine is an internal combustion engine that operates with rotary rather than reciprocating motion. Within each combustion turbine unit, a mixture of compressed air and natural gas is fired in the combustor to produce compressed hot combustion gases. Expansion of these gases in the turbine rotates the turbine shaft that turns a generator to produce electricity.

In stationary applications, the hot combustion gases are directed through one or more fan-like turbine wheels to generate shaft horsepower. A simple cycle turbine is the most basic operating cycle of a gas turbine. It functions with only three primary sections: a compressor, a combustor, and a turbine.

The compressor draws in ambient air and compresses it to a pressure of up to 30 times ambient pressure. The compressed air is then directed to the combustor section where fuel is introduced, ignited, and burned. The hot combustion gases are then diluted with additional cool air from the compressor section and directed to the turbine section. Energy is recovered in the turbine section in the form of shaft horsepower; typically greater than 50 percent of the horsepower is required to drive the internal compressor section. The balance of the recovered shaft energy is available to drive the external load unit. The compressor and turbine sections can be a single fan-like wheel assembly, but are usually made up of a series of stages. The compressor and turbine sections may be associated with one or several connecting shafts. In a single shaft gas turbine, all compressor and turbine stages are fixed to a single continuous shaft and operate at the same speed. The single shaft configuration is typically used to drive electric generators.

The addition of an HRSG to the simple cycle turbine unit creates a combined cycle unit. Heat energy in the turbine exhaust gases are recovered by the HRSG to create steam. This steam energy is then converted to mechanical and electrical energy when it passes through a steam turbine generator unit. Additional heat for the creation of steam can be supplied by duct burners, which increase the turbine exhaust gas temperature. HRSG operation is not dependent upon the firing of the duct burners.

The NorthWestern facility will consist of one steam turbine and two combined cycle gas turbines. The turbines are equipped with dry low $NO_x$ combustors, which are integral to the design of the gas turbines. The gas turbines are manufactured by General Electric. The Model PG7121EA gas turbines have a gross power output of 84.4 MW and a gross heat rate of 10,480 Btu/kWh. The nominal power output of these turbines is 80 MW. The HRSG units, manufactured by Deltak, will be equipped with an SCR and a CO catalyst to further reduce potential $NO_x$ and CO emissions. The steam turbine has a gross power output of 102 MW and the duct burner has a gross heat rate of 2,120 Btu/kWh. The nominal output power of the facility is 262 MW.

The Department placed $NO_x$ emission limits on the facility and required the installation and operation of an SCR unit on each turbine/HRSG unit. Since emissions from the General Electric turbines vary with temperature and load, the Department of Environmental Quality (Department) placed limitations on the NorthWestern facility based on temperature and load. Specifically, the $NO_x$ emissions from the facility increase at times of peak load, so the Department established separate emission limits for those times when the unit is operating at peak load. Furthermore, the Department added a limit to the permit on the amount of time that the facility can operate at peak load. In general, peak load reflects the combustion mode when internal combustion turbine firing temperature is increased by more than 100.0°F above the nominal 100% baseload combustion firing temperature. The firing temperature is a combination of measured and calculated results to determine the true firing temperature in the combustion liner.

The Department also placed limits in the permit to keep the NorthWestern facility below the New Source Review (NSR) thresholds, and consequently, the Title V thresholds as well. The permit is written to allow NorthWestern to operate the simple cycle turbines while construction is in progress for the addition of the HRSG's and steam turbine. Annual $NO_x$ emissions for the entire facility are limited to less than 100 tons per year regardless of which mode NorthWestern is currently operating under or has operated under during the previous 12 months. NorthWestern is required to track the $NO_x$ emissions according to a rolling 12-month time period, using data taken from continuous emission monitors, weather service data, and/or actual power output.

C. Permit History

On October 12, 2001, NorthWestern was issued Permit **#3154-00** for the construction and operation of a nominal 160 MW power generation facility. The permitted facility consisted of two 80 MW General Electric PG7121EA simple cycle gas turbines. After issuance of the Department's Decision on this permit, the permit was appealed to the Board of Environmental Review. Prior to the hearing date scheduled for the NorthWestern appeal, NorthWestern reached a settlement with the appellants. The appellants agreed to drop their appeal if NorthWestern would commit to taking additional actions to counteract the emissions from this facility. NorthWestern agreed to the conditions, but the conditions were not included as part of Permit #3154-00. Instead, the settlement conditions represent an additional agreement between the appellants and NorthWestern.

On January 23, 2002, NorthWestern was issued Permit **#3154-01** for the modification of permit #3154-00. After issuance of the original permit, NorthWestern discovered that equipment modifications can be incorporated into the two turbines that will result in an equal or lower amount of carbon monoxide (CO) emissions, without the use of a CO catalyst. Based on the information that NorthWestern received regarding the equipment modifications, NorthWestern requested that the permit be modified to remove the requirement to install CO catalysts and that the existing emission limits remain the same. The Department agreed with the change and modified the permit to reflect the change. Permit #3154-01 replaced Permit #3154-00.

D. Current Permit Action

On May 28, 2002, the Department received a request from NorthWestern to alter Permit #3154-01 for the potential to add an HRSG to each of the existing 80-megawatt (MW) natural gas-fired simple cycle combustion turbines. The addition of the HRSGs converts the simple cycle turbines into combined cycle systems. The exhaust heat generated from the simple-cycle turbines will produce steam, which will drive a steam turbine. NorthWestern anticipates an additional 102 MW of power generation from the installation of the two HRSGs and one steam turbine, for a total of 262 MW from the facility. Permit **#3154-02** will replace Permit #3154-01.

Based on comments during the preliminary determination comment period, the Department has included conditions to allow NorthWestern to operate simple cycle turbines while construction is in progress for the addition of the HRSG's and steam turbine. Once the combined cycle turbines are constructed and operating, Section II of this permit will no longer apply.

E. Additional Information

Additional information, such as applicable rules and regulations, Best Available Control Technology (BACT) determinations, air quality impacts, and environmental assessments, is included in the analysis associated with each change to the permit.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the Administrative Rules of Montana (ARM) and are available, upon request, from the Department. Upon request, the Department will provide references for the location of complete copies of all applicable rules and regulations, or copies where appropriate.

A. ARM 17.8, Sub-Chapter 1, General Provisions, including, but not limited to:

1. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emissions of any air contaminant into the outdoor atmosphere shall, upon written request of the Department, provide the facilities and necessary equipment (including instruments and sensing devices) and shall conduct tests, emission or ambient, for such periods of time as may be necessary, using methods approved by the Department. Based on the emissions from the turbines, the Department determined that initial testing for $NO_x$, CO, and $PM_{10}$ is necessary. Furthermore, based on the emissions from the turbines, the Department determined that additional testing every 2 years is necessary to demonstrate compliance with the $NO_x$ and CO limits and additional testing every 5 years is necessary to demonstrate compliance with the $PM_{10}$ emission limit.

2. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, any source, or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq.*, Montana Code Annotated (MCA).

   NorthWestern shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual including, but not limited to, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from the Department upon request.

3. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly, by telephone, whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation, or to continue for a period greater than 4 hours.

4. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means that, without resulting in reduction in the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant that would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner that a public nuisance is created.

B. ARM 17.8, Sub-Chapter 2, Ambient Air Quality, including, but not limited to:

1. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide
2. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
3. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide
4. ARM 17.8.213 Ambient Air Quality Standard for Ozone
5. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter
6. ARM 17.8.221 Ambient Air Quality Standard for Visibility
7. ARM 17.8.223 Ambient Air Quality Standard for $PM_{10}$

NorthWestern must maintain compliance with the applicable ambient air quality standards.

C. ARM 17.8, Sub-Chapter 3, Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged into an outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes.

2. ARM 17.8.308 Particulate Matter, Airborne. (1) This section requires an opacity limitation of 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate. (2) Under this section, NorthWestern shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.

3. ARM 17.8.340 Standard of Performance for New Stationary Sources. This section incorporates, by reference, 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS). NorthWestern's combined cycle turbines are considered NSPS affected facilities under 40 CFR Part 60 and are subject to the requirements of the following subpart.

   40 CFR Part 60, Subpart GG Standards of Performance for Stationary Gas Turbines. This subpart applies to both of the combined cycle turbines because the turbines were constructed after October 3, 1977, and because the turbines will have a heat input capacity of greater than 10.7 gigajoules per hour.

4. ARM 17.8.341 Emission Standards for Hazardous Air Pollutants. This section incorporates, by reference, 40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants (NESHAP). Since the emission of Hazardous Air Pollutants (HAP) from the NorthWestern power generation facility is less than 10 tons per year for any individual HAP and less than 25 tons per year for all HAP combined, the NorthWestern facility is not subject to the provisions of 40 CFR Part 61.

5. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants for Source Categories. This section incorporates, by reference, 40 CFR Part 63, NESHAP for Source Categories. Under most circumstances, when the emission of HAP from a facility is less than 10 tons per year for any individual HAP and less than 25 tons per year for all HAP combined, the facility is not subject to the provisions of 40 CFR Part 63. The emission of HAP from the NorthWestern power generation facility is less than 10 tons per year for any individual HAP and less than 25 tons per year for all HAP combined. However, since NorthWestern has a new industrial process cooling tower (IPCT), the facility is subject to the provisions of 40 CFR Part 63, Subpart Q, National Emissions Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers.

   40 CFR Part 63, Subpart Q Standards of Performance for Industrial Process Cooling Towers. This subpart applies to all new and existing IPCT that are operated with chromium-based water treatment chemicals on or after September 8, 1994. The regulation states that no owner or operator shall use chromium-based water treatment chemicals in an IPCT. NorthWestern does not intend to use chromium-based water treatment chemicals in the cooling tower water. Therefore, the facility will comply with the standard and will meet all compliance and notification requirements in Subpart Q.

D. ARM 17.8, Sub-Chapter 5, Air Quality Permit Application, Operation and Open Burning Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. This section requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. NorthWestern submitted the appropriate permit application fee, as required for the current permit action.

2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit, excluding an open burning permit, issued by the Department; and the air quality operation fee is based on the actual, or estimated actual, amount of air pollutants emitted during the previous calendar year.

   An air quality operation fee is separate and distinct from an air quality permit application fee. The annual assessment and collection of the air quality operation fee, described above, shall take place on a calendar-year basis. The Department may insert into any final permit issued after the effective date of these rules, such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions that pro-rate the required fee amount.

E. ARM 17.8, Sub-Chapter 7, Permit, Construction and Operation of Air Contaminant Sources, including, but not limited to:

1. ARM 17.8.701 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.704 General Procedures for Air Quality Preconstruction Permitting. This air quality preconstruction permit contains requirements and conditions applicable to both construction and subsequent use of the permitted equipment.

3. ARM 17.8.705 When Permit Required--Exclusions. This rule requires a facility to obtain an air quality permit or permit alteration if they construct, alter, or use any air contaminant sources that have the potential to emit more than 25 tons per year of any pollutant. NorthWestern has the potential to emit greater than 25 tons per year of particulate matter PM, $PM_{10}$, $NO_x$, and CO; therefore, a permit is required.

4. ARM 17.8.707 Waivers. ARM 17.8.706 requires the permit application to be submitted 180 days prior to construction. This rule allows the Department to waive this time limit. The Department hereby waives this time limit.

5. ARM 17.8.710 Conditions for Issuance of Permit. This section requires that NorthWestern demonstrate compliance with applicable rules and standards before a permit can be issued. Also, a permit may be issued with such conditions as are necessary to assure compliance with all applicable rules and standards. NorthWestern demonstrated compliance with applicable rules and standards as required for permit issuance.

6. ARM 17.8.715 Emission Control Requirements. NorthWestern is required to install on the new or altered source the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. The BACT analysis can be found in Section IV of this permit analysis.

7. ARM 17.8.716 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the Department at the location of the source.

8. ARM 17.8.717 Compliance with Other Statutes and Rules. This rule states that nothing in the permit shall be construed as relieving NorthWestern of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.701, *et seq.*

9. ARM 17.8.720 Public Review of Permit Applications. This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. NorthWestern submitted proof of publication for the June 6, 2002, issue of the *Great Falls Tribune*, a newspaper of general circulation in Cascade County, Montana.

10. ARM 17.8.731 Duration of Permit. An air quality permit shall be valid until revoked or modified as provided in this subchapter, except that a permit issued prior to construction of a new or altered source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.

11. ARM 17.8.733 Modification of Permit. An air quality permit may be modified for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase in emissions because of those changed conditions. A source may not increase its emissions beyond those found in its permit unless the source applies for and receives another permit.

12. ARM 17.8.734 Transfer of Permit. This section states that an air quality permit may be transferred from one person to another if written notice of Intent to Transfer, including the names of the transferor and the transferee, is sent to the Department.

F. ARM 17.8, Sub-Chapter 8, Prevention of Significant Deterioration of Air Quality, including, but not limited to:

1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.

2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification, with respect to each pollutant subject to regulation under the Federal Clean Air Act (FCAA) that it would emit, except as this subchapter would otherwise allow.

   Although the conversion of the facility from simple cycle gas turbines to combined cycle gas turbines would not increase the air emissions from the turbines, the change makes the facility a "listed facility" and the Prevention of Significant Deterioration (PSD) threshold changes from 250 tons per year to 100 tons per year for a major stationary source. Due to proposed limitations, the facility does not have the potential to emit more than 100 tons per year of any criteria pollutant. Therefore, the NorthWestern facility is not deemed a major stationary source and is not subject to review under the PSD program. Based on this proposal, the Department added limits to Permit #3154-02 that keep the potential $NO_x$, CO, PM and $PM_{10}$ emissions to less than 100 tons per rolling 12-month time period.

G. ARM 17.8, Subchapter 12, Operating Permit Program Applicability, including, but not limited to:

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any stationary source having:

   a. Potential To Emit (PTE) > 100 tons/year of any pollutant

   b. PTE > 10 tons/year of any one HAP, or PTE > 25 tons/year of a combination of all HAPs, or lesser quantity as the Department may establish by rule.

   c. Sources with the PTE > 70 tons/year of $PM_{10}$ in a serious $PM_{10}$ nonattainment area.

2. ARM 17.8.1204 Air Quality Operating Permit Program Applicability. Title V of the FCAA Amendments of 1990 requires that all sources, as defined in ARM 17.8.1204(1), obtain a Title V Operating Permit. In reviewing and issuing Air Quality Permit #3154-02 for NorthWestern, the following conclusions were made:

   a. The facility's PTE is less than 100 tons/year for several criteria pollutants.
   b. The facility's PTE is less than 10 tons/year of any one HAP and less than 25 tons/year of

all HAPs.

c. This facility is not located in a serious $PM_{10}$ nonattainment area.

d. This facility is subject to a current NSPS standard (40 CFR 60, Subpart GG and 40 CFR 63, Subpart Q).

e. This facility is not subject to any current NESHAP standards.

f. This facility is a Title IV affected source.

g. This facility is not an EPA designated Title V source.

h. (2) The Department may exempt a source from the requirement to obtain an air quality operating permit by establishing federally enforceable limitations which limit that source's potential to emit.

i. In applying for an exemption under this section, the owner or operator of the source shall certify to the Department that the source's potential to emit, does not require the source to obtain an air quality operating permit.
ii. Any source that obtains a federally enforceable limit on potential to emit shall annually certify that its actual emissions are less than those that would require the source to obtain an air quality operating permit.

NorthWestern has taken federally enforceable permit limits to keep potential emissions below major source permitting thresholds. Therefore, the facility is not a major source and, thus a Title V operating permit is not required.

The Department determined that the annual reporting requirements contained in the permit are sufficient to satisfy this requirement.

3. ARM 17.8.1207 Certification of Truth, Accuracy, and Completeness.

NorthWestern shall annually certify that its actual emissions are less than those that would require the source to obtain an air quality operating permit as required by ARM 17.8.1204 (3)(b). The annual certification shall comply with requirements of ARM 17.8.1207. The annual certification shall be submitted along with the annual emission inventory information.

III. BACT Determination

A BACT determination is required for each new or altered source. NorthWestern shall install on the new source the maximum air pollution control capability that is technically practicable and economically feasible, except that the BACT shall be utilized.

A. $NO_x$ BACT

The BACT analysis included Selective Catalytic Reduction (SCR), Dry Low $NO_x$ wet controls, and innovative catalytic systems (SCONOX and XONON). A summary of the analysis of these controls is shown below.

1. SCR

SCR is a post-combustion gas treatment technique for reduction of nitric oxide (NO) and nitrogen dioxide ($NO_2$) in the engine exhaust stream to molecular nitrogen, water, and oxygen. In the SCR process, aqueous or anhydrous ammonia ($NH_3$) or urea is used as a reducing agent, and is injected into the flue gas upstream of the catalyst bed. $NO_x$ and $NH_3$ combine at the catalyst surface, forming an ammonium salt intermediate that subsequently

decomposes to produce elemental nitrogen and water.

SCR works best for flue gas temperatures between 400°F and 800°F, when a minimum amount of $O_2$ is present. Use of a zeolite catalyst can extend the upper range of this window to a maximum of 1100ºF. Typically, a metal-based catalyst is employed in a combined cycle application, where it is installed within the heat recovery steam generator. The catalyst and catalyst housing tend to be very large and contain a large amount of surface area. The SCR system is usually operated in conjunction with other technologies. Disposal of spent catalyst must be considered. Unlike zeolite and precious metal catalysts, base metal catalysts constitute hazardous waste. The maximum stack temperature for the turbines is approximately 1100°F and the stack temperature at the base case and average ambient temperature of Great Falls is approximately 989°F. The exit gas stream of the turbines would need to be cooled in order to use SCR as a control technology.

As calculated as part of the BACT analysis, the cost effectiveness of installing an SCR is prohibitive. An SCR unit would cost approximately $28,000 per ton of $NO_x$ removed. The cost of $28,000 per ton of reduction is well above industry norms. Furthermore, SCR can result in additional air emissions, such as ammonia. Due to the overall cost of using this technology in comparison to the base case and the potential for increased ammonia emissions, the Department determined that SCR technology does not constitute BACT in this case.

2. Dry Low $NO_x$

Dry low $NO_x$ combustion systems reduce $NO_x$ formation by controlling the mixing of fuel and air to provide low excess air firing or off-stoichiometric combustion. These burners are designed to reduce peak flame temperature and/or reduce the residence time at high temperatures. In all gas turbines, the high temperature combustion gases are cooled with dilution air that is added sooner than with standard combustors. This dilution air promptly cools the hot gases to temperatures below the thermal $NO_x$ formation threshold. Because NorthWestern proposes to install turbines that have emission characteristics similar to lean burn technology configured on natural gas-fired reciprocating engines, the Department determined that dry low $NO_x$ combustors will not constitute BACT in this case.

3. Wet Controls

Water or steam injection technology can suppress $NO_x$ emissions from gas turbines. The injected fluid increases the thermal mass by dilution and thereby reduces peak temperatures in the flame zone.

Water purity is essential to control erosion and the formation of deposits in the hot section of the turbine. All manufacturers offer water injection systems, but not all offer a steam injection system. Steam would be generally supplied by the HRSG.

$NO_x$ reduction efficiency increases as the water-to-fuel ratio increases. For maximum efficiency, the water must be atomized and injected with homogeneous mixing throughout the combustor. This technique reduces the thermal $NO_x$, but may actually increase the production of fuel $NO_x$. CO and VOC emissions may increase while using water injection. In general, the highest percent reduction of $NO_x$ emissions obtained by using wet controls is still higher than the resulting $NO_x$ emissions from the base case. Since the base case will result in lower $NO_x$ emissions than the use of wet controls, the Department determined that wet controls do not constitute BACT in this case.

4. Innovative Catalytic Systems

Innovative catalytic technologies (SCONOX and XONON) integrate catalytic oxidation and absorption technology. In the SCONOX process, CO and NO are catalytically oxidized to $CO_2$ and $NO_x$; the $NO_2$ molecules are subsequently absorbed on the treated surface of the SCONOX catalyst. HAPs may increase from the SCONOX technology.

The XONON system is applicable to diffusion and lean-premix combustors. It utilizes a flameless combustion system where fuel and air react on a catalyst surface, preventing the formation of $NO_x$ while achieving low CO levels. The overall combustion system consists of the partial combustion of the fuel in the catalyst module followed by completion of combustion downstream of the catalyst. Initial partial combustion produces no $NO_x$ and downstream combustion occurs in a flameless homogeneous reaction that produces almost no $NO_x$. The system is totally contained within the combustor and is not an add-on process for clean up of the turbine exhaust.

The SCONOX and XONON technologies have only been proven on smaller generation units. Due to the questions on the effectiveness of using this control technology for larger generation units and the overall cost of using this technology in comparison to the base case, the Department determined that innovative catalytic systems do not constitute BACT in this case.

5. No Additional Control

NorthWestern proposed that the use of no additional controls should constitute BACT for each of the combustion turbines. No additional control, in this case, would result in the use of General Electric, Model PG7121EA simple cycle gas turbines. Integral to the design of these General Electric turbines is a dry low $NO_x$ burner. General Electric guarantees that the $NO_x$ emissions from these turbines can meet a 9-ppmv-emission level. The Department determined that "no additional control" constitutes BACT in this case because the emissions from the General Electric, Model PG7121EA simple cycle gas turbine are relatively low and the incremental cost to incorporate additional control would be too high.

In summary, based on the potential emissions from each of the turbines and the incremental cost to control the $NO_x$ emissions, the Department determined that no additional controls beyond those integral to the design of the turbines will constitute BACT for the turbines.

Aside from the BACT determination, NorthWestern has proposed to install an SCR unit to keep the emissions of $NO_x$ from this facility below the 100 tons per year threshold for NSR.

B. CO BACT

The BACT analysis included oxidation (thermal and catalytic) and proper design and combustion for the turbine. A summary of the analysis of these controls is shown below.

1. Oxidation

Oxidation controls ideally break down the molecular structure of an organic compound into $CO_2$ and water vapor. Temperature, residence time, and turbulence of the system affect CO control efficiency. Incinerators or oxidizers have the potential for very high CO control efficiency; however, this efficiency comes at the expense of potentially increasing $NO_x$ production. A thermal incinerator operates at temperatures ranging between 1450°F and 1600°F. Catalytic incineration is similar to thermal incineration; however, catalytic incineration allows for oxidation at temperatures ranging from 600°F to 1000 °F. The catalyst systems that are used are typically metal oxides such as nickel oxide, copper oxide, manganese oxide, or chromium oxide. Due to the high temperatures required for complete destruction, fuel costs can be expensive and fuel consumption can be excessive with oxidation units. To lower fuel usage, regenerative thermal oxidizers (RTO's) or catalytic oxidizers can be used to preheat contaminated process air in a heat recovery chamber. The cost effectiveness of catalytic oxidation is approximately $10,522 per ton, and the cost

effectiveness for an RTO is approximately $59,855 per ton. Due to the high cost per ton of CO reduction, the Department determined that oxidation controls do not constituted BACT in this case.

2. No Additional Control

No additional control, or the base case, would involve using proper combustion practices to minimize the CO emissions. Based on the high cost per ton of CO reduction for the other CO control technologies, the Department determined that no additional control constitutes BACT in this case.

In summary, RTO or catalytic oxidizer application on the proposed turbines is considered to be economically infeasible with costs significantly greater than industry norms. Additionally, oxidizer application could potentially pose additional adverse energy and environmental impacts. Therefore, due to economic, energy, and environmental considerations, the Department concurs with NorthWestern that no additional control constitutes BACT for each of the turbines.

Aside from the BACT determination, NorthWestern has proposed to install an oxidation catalyst to keep the emissions of CO from this facility below the 100 tons per year threshold for NSR.

C. Particulate Matter/$PM_{10}$ BACT

1. Electrostatic Precipitator (ESP)

An ESP uses electric forces to move particles out of a gas stream and on to collection plates. The particles are given an electric charge by forcing them to pass through the corona that surrounds a highly charged electrode. The electrical field then forces the charged particles to the opposite charged electrode, usually a plate. Solid particles are removed from the collection electrode by a shaking process known as “rapping.”

Because of the difficulty in treating large volumes of gas with an ESP, the technical feasibility of this option is in question. Regardless of the technical feasibility, the cost of this control technology would be cost prohibitive when looking at the relatively low uncontrolled emissions of particulate matter. For these reasons, an ESP does not constitute BACT for control of particulate emissions from the turbines.

2. Fabric Filter (Baghouse)

Baghouses consist of one or more isolated compartments containing rows of fabric filter bags or tubes. The gas stream passes through the fabric filter, where particulate is retained on the upstream face of the bags, while the cleaned gas stream is vented to the atmosphere or to another pollution control device. While bags can be obtained that are capable of handling such a high temperature gas, the cost effectiveness of installing a baghouse with the appropriate bags is cost prohibitive and well above industry norms. For these reasons, a baghouse does not constitute BACT for control of particulate emissions from the turbines.

3. Wet Scrubber

Wet scrubbers typically use water to impact, intercept, or diffuse a particulate-laden gas stream. With impaction, particulate matter is accelerated and impacted onto a surface area or into a liquid droplet through devices such as venturis and spray chambers. Using interception, particles flow nearly parallel to the water droplets that allow the water to intercept the particles. Diffusion is used for particles smaller than 0.5 microns and where there is a high temperature difference between the gas and the scrubbing liquid.
Using a wet scrubber would result in additional environmental concerns, most notably, the large volume of wastewater that would result from the process. In addition, the cost effectiveness of this technology would be greater than industry norms due to the high cost of

the control technology and the relatively low uncontrolled emissions of particulate matter. For these reasons, a wet scrubber does not constitute BACT for particulate emissions from the turbines.

4. No Additional Control

The high volumetric flow rate of gas through the turbines, with relatively low particulate loading, makes the total annual cost of control equipment cost prohibitive. For these reasons, the use of "no additional control" will constitute BACT for the turbines.

The control options selected as part of this review have controls and control costs that are comparable to other recently permitted similar sources. The control options that were selected are capable of achieving the appropriate emission standards.

D. Emergency Water Pump BACT

The diesel-fired emergency water pump is limited to 500 hours of operation per year. The emissions for all the criteria pollutants are less than 1 ton per year. Therefore, a BACT analysis is not required for the emergency pump.

E. Cooling Tower BACT

Because the cooling tower will provide direct contact between the cooling water and the air passing through the tower, some of the cooling water may become entrained in the air stream and be carried out of the tower as "drift" droplets. When the drift droplets evaporate, dissolved solids can crystallize and create $PM_{10}$ emissions. For this project, the total liquid drift rate is assumed to be 0.002 percent of the circulating water flow. This drift is achieved by using high efficiency drift eliminators. The total amount of $PM_{10}$ emissions calculated using this drift is 2.8 tons per year. This annual emissions rate was calculated based on the assumption that all total dissolved solids in drift water are converted to $PM_{10}$, which overestimates the actual $PM_{10}$ emissions. Since the actual $Pm_{10}$ emissions are relatively small, the drift eliminator with a 0.002% drift rate is assumed BACT.

## IV. Emission Inventory

| | Ton/Year | | | | | |
|---|---|---|---|---|---|---|
| Source | PM | $PM_{10}$ | $NO_x$ | CO | VOC | $SO_x$ |
| GE 7EA 80 MW Gas Turbine #1 | 48.00 | 48.00 | 48.72 | 48.98 | 8.8 | 2.8 |
| GE 7EA 80 MW Gas Turbine #2 | 48.00 | 48.00 | 48.72 | 48.98 | 8.8 | 2.8 |
| Fire Pump Driver (265 BHP) | 0.046 | 0.046 | 0.73 | 0.36 | 0.047 | 0.54 |
| Cooling Tower | 2.84 | 2.84 | | | | |
| Totals | 98.89 | 98.89 | 98.17 | 98.32 | 17.654 | 6.14 |

(Note: The above inventory is based on operating in the combined cycle mode. The inventory for the simple cycle mode can be found in permit #3154-01)

(SOURCE #01)
Combined Cycle GE 7EA 80 MW Gas Turbine #1 plus HRSG unit (duct burner)

| | |
|---|---|
| Size = | 131 MW |
| Hours of Operation = | 8,760 hr/yr |
| Max Fuel Flow = | 8,493,696 MMBtu/yr |
| Heat Input = | 981.71 MMBtu/hr |
| % Sulfur in Fuel = | 0.0023 |
| Fuel Heating Value = | 1,020 Btu/SCF |

PM Emissions
Emission Factor: 11.23 lb/hr {Manufacturer's Guarantee}
Calculations: 11.23 lb/hr * 8550 hr/yr * 0.0005 ton/lb = 48.0 ton/yr

(Note: NorthWestern is not specifically limited to 8550 hours per year. Rather, NorthWestern is limited to keeping the $PM_{10}$ emissions below 100 tons per rolling 12-month period. In doing this, NorthWestern may or may not need to limit the hours of operation of the unit.)

$PM_{10}$ Emissions
Emission Factor: 11.23 lb/hr {Manufacturer's Guarantee}
Calculations: 11.23 lb/hr * 8550 hr/yr * 0.0005 ton/lb = 48.0 ton/yr

$NO_x$ Emissions
Emission Factor: 49.97 lb/hr {Manufacturer's Guarantee and SCR}
Calculations: 49.97 lb/hr * 1950 hr/yr * 0.0005 ton/lb = 48.72 ton/yr

(Note: NorthWestern is not specifically limited to 1950 hours per year. Rather, NorthWestern is limited to keeping the $NO_x$ emissions below 100 tons per rolling 12-month period. In doing this, NorthWestern may or may not need to limit the hours of operation of the unit.)

CO Emissions
Emission Factor: 37.97 lb/hr {Manufacturer's Guarantee and catalyst control}
Calculations: 37.97 lb/hr * 2580 hr/yr * 0.0005 ton/lb = 48.98 ton/yr

(Note: NorthWestern is not specifically limited to 2580 hours per year. Rather, NorthWestern is limited to keeping the COemissions below 100 tons per rolling 12-month period. In doing this, NorthWestern may or may not need to limit the hours of operation of the unit.)

VOC Emissions
Emission Factor: 2.0 lb/hr {Manufacturer's Guarantee}
Calculations: 2.0 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 8.8 ton/yr

$SO_x$ Emissions
Emission Factor: 0.65 lb/hr {Manufacturer's Guarantee}
Calculations: 0.65 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 2.8 ton/yr

(SOURCE #02)
Combined Cycle GE 7EA 80 MW Gas Turbine #2 plus HRSG (duct burner)

| | |
|---|---|
| Size = | 131 MW |
| Hours of Operation = | 8,760 hr/yr |
| Max Fuel Flow = | 8,493,696 MMBtu/yr |
| Heat Input = | 981.71 MMBtu/hr |
| % Sulfur in Fuel = | 0.0023 |
| Fuel Heating Value = | 1,020 Btu/SCF |

PM Emissions
Emission Factor: 11.23 lb/hr {Manufacturer's Guarantee}
Calculations: 11.23 lb/hr * 8550 hr/yr * 0.0005 ton/lb = 48.0 ton/yr

(Note: NorthWestern is not specifically limited to 8550 hours per year. Rather, NorthWestern is limited to keeping the $PM_{10}$ emissions below 100 tons per rolling 12-month period. In doing this, NorthWestern may or may not need to limit the hours of operation of the unit.)

$PM_{10}$ Emissions
Emission Factor: 11.23 lb/hr {Manufacturer's Guarantee}
Calculations: 11.23 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 48.0 ton/yr

$NO_x$ Emissions
Emission Factor: 49.97 lb/hr {Manufacturer's Guarantee and SCR}
Calculations: 49.97 lb/hr * 1950 hr/yr * 0.0005 ton/lb = 48.72 ton/yr

(Note: NorthWestern is not specifically limited to 1950 hours per year. Rather, NorthWestern is limited to keeping the $NO_x$ emissions below 100 tons per rolling 12-month period. In doing this, NorthWestern may or may not need to limit the hours of operation of the unit.)

CO Emissions
Emission Factor: 37.97 lb/hr {Manufacturer's Guarantee and catalyst control}
Calculations: 37.97 lb/hr * 2580 hr/yr * 0.0005 ton/lb = 48.98 ton/yr

(Note: NorthWestern is not specifically limited to 2580 hours per year. Rather, NorthWestern is limited to keeping the CO emissions below 100 tons per rolling 12-month period. In doing this, NorthWestern may or may not need to limit the hours of operation of the unit.)

VOC Emissions
Emission Factor: 2.0 lb/hr {Manufacturer's Guarantee}
Calculations: 2.0 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 8.8 ton/yr

$SO_x$ Emissions
Emission Factor: 0.65 lb/hr {Manufacturer's Guarantee}
Calculations: 0.658 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 2.8 ton/yr

(SOURCE #03)
John Deere Diesel-fired Emergency Water Pump
Size = 265BHP
Hours of Operation 500 hr/yr

PM Emissions
Emission Factor: 0.0007 lb/hp-hr {AP-42 Table 3.3-1, 7/95}
Calculations: 265 bhp * 0.0007 lb/hp-hr * 500 hr/yr * 0.0005 ton/lb = 0.046 ton/yr

$PM_{10}$ Emissions
Emission Factor: 0.0007 lb/hp-hr {AP-42 Table 3.3-1, 7/95}
Calculations: 265 bhp * 0.0007 lb/hp-hr * 500 hr/yr * 0.0005 ton/lb = 0.046 ton/yr

$NO_x$ Emissions
Emission Factor: 0.011 lb/hp-hr {AP-42 Table 3.3.1, 7/95}
Calculationa: 265 bhp * 0.011 lb/hp-hr * 500 hr/yr 0.0005 ton/lb = 0.73ton/yr

CO Emissions
Emission Factor: 0.0.0055 lb/hp-hr {AP-42 Table 3.3.1, 7/95}
Calculations: 265 bhp * 0.0055 lb/hp-hr * 500 hr/yr * 0.0005 ton/lb = 0.36 ton/yr

VOC Emissions
Emission Factor: 0.00071 lb/hp-hr {AP-42 Table 3.3-1, 7/95}
Calculations 265 bhp * 0.00071 lb/hp-hr * 500 hr/yr * 0.0005 ton/lb = 0.047 ton/yr

$SO_x$ Emissions
Emission Factor: 0.00809 lb/hp-hr {AP-42 Table 3.3-1, 7/95}
Calculations 265bhp * 0.00809 lb/hp-hr * 500 hr/yr * 0.0005 ton/lb = 0.54 ton/yr

(SOURCE #04)
Cooling Towers

PM Emissions
Emission Factor: 0.65 lb/hr {Manufacturer's Guarantee}
Calculations: 0.65 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 2.85 ton/yr

$PM_{10}$ Emissions
Emission Factor: 0.65 lb/hr {Manufacturer's Guarantee}
Calculations: 0.65 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 2.85 ton/yr

## V. Existing Air Quality

The plant site is located in Section 30, Township 21 North, Range 4 East, in Cascade County, Montana. The air quality of this area is classified as either "Better than National Standards" or unclassifiable/attainment of the National Ambient Air Quality Standards (NAAQS) for criteria pollutants. Ambient air quality modeling (ISC3) was submitted by NorthWestern, and reviewed by the Department, that demonstrates that this facility will not cause or contribute to a violation of any ambient air quality standards.

The ISC3 modeling, using Great Falls meteorological data showed that all of the impacts from this project were below the PSD modeling significance levels. Since the results were below the significance levels, NAAQS/Montana Ambient Air Quality Standards (MAAQS) or PSD Class II increment analyses were not required. However, at the Department's request, $NO_x$ and $PM_{10}$ Class

II increment analysis and NAAQS/MAAQS was performed. Also, Air Quality Related Value (AQRV), Class I increment, Class I visibility impact, and lake acidification analyses were performed using ISC3 or VISCREEN. No impacts were determined to be unacceptable or violate standards.

VI. Ambient Air Impact Analysis

The Department determined that the impact from the current permitting action would have no impact on the existing air quality or on the impacts that were initially identified for the natural gas fired power plant. The Department believes that the current permit action will not cause or contribute to a violation of any ambient air quality standard.

VII. Taking or Damaging Implication Analysis

As required by 2-10-101 through 105, MCA, the Department conducted a private property taking and damaging assessment and determined there are no taking or damaging implications.

VIII. Environmental Assessment

An environmental assessment, required by the Montana Environmental Policy Act, was completed for this project. A copy is attached.

DEPARTMENT OF ENVIRONMENTAL QUALITY
Permitting and Compliance Division
Air and Waste Management Bureau
P.O. Box 200901, Helena, Montana 59620
(406) 444-3490

**FINAL ENVIRONMENTAL ASSESSMENT (EA)**

Issued To: NorthWestern Montana First Megawatts, LLC
125 S. Dakota Avenue
Sioux Falls, SD 57104-6403

Air Quality Permit Number: #3154-02

Preliminary Determination Issued: 07/03/02
Department Decision Issued: 07/25/02
Permit Final: 08/10/02

1. *Legal Description of Site*: The NorthWestern power plant would be located approximately 2 miles north of Great Falls. The legal description of the site would be Section 30, Township 21 North, Range 4 East, in Cascade County, Montana. NorthWestern owns approximately 330 acres of property in the area and would use approximately 30 acres for the proposed facility.

2. *Description of Project*: The Department proposes to issue an air quality preconstruction permit to NorthWestern for the construction and operation of a nominal 262-MW (175,674 Hp) natural gas-fired power plant. In addition to the air quality preconstruction permit, the project would include annexation into the city of Great Falls for water and sewer demands. Neither the supplier of the gas nor the transmission route has been determined by NorthWestern at this time.

   The facility would consist of two General Electric Model PG7121EA gas turbines each fitted with an HRSG and other ancillary equipment that would support operation of the turbines. The combined cycle turbines use the exhaust heat from the simple cycle turbines and additional heat from the duct burning (natural gas burners) to produce steam, which, in turn, drives a steam turbine. The turbines would be contained in a large building. The facility would consume approximately 17,669-million standard cubic feet (MMscf) per year of natural gas. The plant would be used to supply power to Montana and other NorthWestern clients. According to the additional submittal by Bison Engineering, Inc. on behalf of NorthWestern, NorthWestern has offered two-thirds of the power to Montana for its own use.

   Another portion of the NorthWestern project would be the annexation of the facility property into the city of Great Falls. After annexation, the facility would use the City of Great Falls water supply and discharge all spent water to the City of Great Falls sewer system. In addition to the water issues, the annexation would include other upgrades to the area, such as improvements to the roads surrounding the facility, availability of the local police and fire Departments, storm drain discharge, etc. Previous discussions between city/county planners and the developers of the land have indicated that the annexation process would be a viable process for the proposed area. If the annexation process does not occur, then NorthWestern would have to place an on-site septic system at the facility to treat the spent potable water, sewage discharge from about 15 people, general facility cleaning water, and stormwater discharge. The addition of the on-site septic system would require a permit and proposal review. All indications are that the annexation process would be beneficial to the City of Great Falls and NorthWestern and that the annexation of this area into the City of Great Falls would occur.

3. *Objectives of Project*: The objective of the project would be for NorthWestern to establish a nominal 262-MW natural gas-fired power plant to generate marketable electricity within their field of expertise (natural gas compression and transmission). The current phase of the project (Phase III) involves the installation of duct burners on each of the simple cycle turbines, and the addition of a steam generator and associated equipment. This phase would result in decreased emissions from the facility, which would reduce air quality impacts and generate an additional 102 MW of electrical energy.
4. *Alternatives Considered*: In addition to the proposed action, the Department also considered the "no

action" alternative. The "no action" alternative would deny the issuance of the air quality preconstruction permit to the proposed facility. However, the Department does not consider the "no action" alternative to be appropriate because NorthWestern demonstrated compliance with all applicable rules and regulations as required for permit issuance. Therefore, the "no action" alternative was eliminated from further consideration.

During the public comment period for Permit #3154-00, the Department received comments regarding the use of wind generation for power as an alternative to the natural gas-fired power plant. The alternative of using wind to generate power was dismissed because wind generation was not within the scope of the project as proposed to the Department, the proposal for the natural gas-fired power plant meets the criteria for obtaining an air quality permit, and the natural gas-fired power plant would be privately owned and result in no significant impacts.

5. *A Listing of Mitigation, Stipulations, and Other Controls*: A list of enforceable conditions, including a BACT analysis, would be included in Permit #3154-02.

6. *Regulatory Effects on Private Property*: The Department considered alternatives to the conditions imposed in this permit as part of the permit development. The Department determined that the permit conditions would be reasonably necessary to ensure compliance with applicable requirements and demonstrate compliance with those requirements and would not unduly restrict private property rights.

7. The following table summarizes the potential physical and biological effects of the proposed project on the human environment. The "no action" alternative was discussed previously.

| **Potential Physical and Biological Effects** | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Major | Moderate | Minor | None | Unknown | Comments Included |
| A. | Terrestrial and Aquatic Life and Habitats | | | X | | | yes |
| B. | Water Quality, Quantity, and Distribution | | | X | | | yes |
| C. | Geology and Soil Quality, Stability, and Moisture | | | X | | | yes |
| D. | Vegetation Cover, Quantity, and Quality | | | X | | | yes |
| E. | Aesthetics | | | X | | | yes |
| F. | Air Quality | | | X | | | yes |
| G. | Unique Endangered, Fragile, or Limited Environmental Resource | | | X | | | yes |
| H. | Demands on Environmental Resource of Water, Air, and Energy | | | X | | | yes |
| I. | Historical and Archaeological Sites | | | X | | | yes |
| J. | Cumulative and Secondary Impacts | | | X | | | yes |

SUMMARY OF COMMENTS ON POTENTIAL PHYSICAL AND BIOLOGICAL EFFECTS: The following comments have been prepared by the Department.

A. Terrestrial and Aquatic Life and Habitats

Overall, the impacts from this project to terrestrial and aquatic life and habitats would be minor because of the relatively small portion of land that would be disturbed and the minor impact to the surrounding area from the air emissions (considering the air dispersion characteristics). Terrestrials (such as deer, antelope, rodents) would use the general area of the facility. The area around the facility would be fenced to limit access to the facility. However, the fencing would

likely not restrict access from all animals that frequent the area, but it may discourage some animals from entering the facility property. The surrounding area is currently used for agricultural purposes and will remain an agricultural area. In fact, NorthWestern has indicated that their remaining property (approximately 300 acres) may be leased or sold for agricultural purposes. Other industrial sources, such as Montana Refining Company, Malmstrom Air Force Base, and Agri-Technology Corporation, are located within a few miles of the property boundary.

Aquatic life and habitats would realize little or no impact from the proposed facility because NorthWestern is not proposing to directly discharge any material to the surface or ground water in the area. The total amount of water circulating through the cooling tower is 458,000 gallons per year. The cooling tower will be designed for 8 concentration cycles, which will recirculate the water, including total dissolved solids. The resulting air emissions to any water body would be minor.

The modeling analysis (see section 7.F of this EA) of the air emissions from this facility indicates that the impacts from the NorthWestern emissions on land or surface water would be very minor and would consume only a small portion of the ambient air quality standards. The small amount of air impact would correspond to an equally small amount of deposition.

The city annexation (sewer and water) portion of this project would result in very little impact on the terrestrial and aquatic life and habitats because the activities would result in minimal disturbance to land/water and the disturbances would be temporary in those areas that are not already disturbed. The sewer and water system upgrade may require the use of motor vehicles, but again, the impacts would be minor and of a short time duration.

B. Water Quality, Quantity, and Distribution

The proposed facility would result in minor impacts to water quality, quantity, and distribution in the area because little or no impacts to the surrounding surface area would result from the air emissions. In a combined cycle power plant, a fuel is combusted and the resulting heat is then used to create steam to turn a steam generator. Outlet steam from the generator is cooled in a water-cooling tower. Although a substantial amount of water would be used in the cooling tower, the water would be recirculated through the system resulting in relatively low demands for water. As part of the project, the facility will be annexed into the City of Great Falls for water demands and sewage discharge.

As described in Section 7.F of this EA, the maximum impacts from the air emissions from this facility would be relatively minor. As a result of the relatively low air impact from this facility, the corresponding deposition of the air pollutants in the area would also be very minor. Furthermore, the highest impacts identified in Section 7.F do not occur on or near any surface water. Based on the dispersion characteristics (wind speed, wind direction, atmospheric stability, stack temperature, etc.) of the area, the highest impacts would not be at or near the river.

Other water necessary for plant operation would be potable water for approximately 15 people, restroom water for approximately 15 people, and the water necessary for general plant cleaning. All water for the facility would be obtained from the Great Falls municipal water supply, and all spent water would be discharged to the Great Falls city sewer (city annexation portion of project). The impacts from the water demands for this facility, with approximately 15 employees, would be relatively minor and would be somewhat higher than the impacts created by surrounding home usage and disposal of water.

C. Geology and Soil Quality, Stability, and Moisture

The impacts to the geology and soil quality, stability, and moisture from this facility would be minor because the project would impact a relatively small portion of land and the amount of resulting deposition of the air emissions would be small. Approximately 30 acres or less would be disturbed for the physical construction of the power plant. Soil stability in the immediate

vicinity of the proposed facility would likely be impacted by the new footings and foundations required for the facility. The major construction required for the facility would be the building that would house the turbines. The building dimensions would be approximately 100-feet wide, 315-feet long, and 30-feet high. The facility would not be discharging any material directly to the soil of the immediate area. Some of the air emissions from the facility may deposit on local soils, but that deposition would result in only a minor impact to local areas because of the air dispersion characteristics of the area (See Section 7.F of this EA).

The city annexation (sewer and water) portions of this project would result in very little impact on the geology and soil quality, stability, and moisture because the activities would result in minimal disturbance to land/water and the disturbances would be temporary in those areas that are not already disturbed. The sewer and water system upgrade would require the use of motor vehicles, but again, the impacts would be minor and of a short time duration.

D. Vegetation Cover, Quantity, and Quality

The proposed project would result in minor impacts on the vegetative cover, quantity, and quality in the immediate area because only a small amount of property would be disturbed and the resulting deposition from air emissions would be relatively small. The main physical disturbance from the facility would be the building described in Section 7.C. However, including the building, approximately 30 acres of land would be impacted by the construction and operation of the facility. In comparison to the surrounding agricultural properties, the disturbance of this acreage would be a very small percentage of the vegetative cover in the area. See Section 8.D of this EA.

In addition, as described in Section 7.F of this EA, the modeled air impacts from the air emission from this facility are minor. As a result, the corresponding deposition of the air pollutants on the surrounding vegetation would also be minor.

The annexation portion of the project would have little, if any impact on the vegetation in the area because the disturbances would occur on previously disturbed land and other relatively small portions of land. Those disturbances to previously disturbed land would be of short duration and would eventually return to their current status. Of those impacts to new areas, the amount of vegetation disturbed for the annexation process would be small. Furthermore, most of the newly disturbed areas would recover to their current status after installation of the appropriate utilities.

E. Aesthetics

The impacts to the aesthetics of the area from this project would be minor because the size of the structures required for this facility would be relatively small, other industrial and commercial facilities/structures are located in the nearby area, the facility would barely (if at all) be visible from gathering places along the river, and the noise from the facility would be low. The facility would consist of one large building, and other ancillary equipment that would support the operation of the facility.

The NorthWestern facility would be visible from Highway 87 (approximately ½ mile away) and may be partially visible from the Lewis and Clark Interpretive Center (approximately 1.8 miles away) and Giant Springs Heritage State Park (approximately 1.9 miles away). Based on the extent that the radio/television towers around Black Eagle Road are visible from the Lewis and Clark Interpretive Center, it appears that the two stacks at the NorthWestern facility may be partially visible. However, only a small portion of the stacks would likely be visible. Compared to the other structures visible from the Lewis and Clark Interpretive Center, such as the radio/television towers, the water tank, houses, and electrical substations, the NorthWestern facility would have minor impacts because the stacks are relatively small and only a portion of the proposed facility would likely be visible. In addition to the partially visible stacks, steam plumes would be visible from the facility on those days with temperatures low enough to cause steam plumes to form. This impact would be minor as well because on these days there are many

more steam plumes visible from other facilities, cars, residences, wood stoves, etc. in the area.

The Department received comments on Permit #3154-00 regarding the Upper Missouri River Breaks National Monument. According to the Bureau of Land Management's web-site, the center of this monument is the 149-mile long Upper Missouri National Wild and Scenic River. The Upper Missouri River begins at historic Fort Benton, Montana on U.S. Highway 87 and ends 149 miles downstream where the Fred Robinson Bridge on U.S. Highway 191 crosses the Missouri River. Fort Benton is approximately 36 miles from the site location of the proposed NorthWestern power plant. The NorthWestern project would not affect the Upper Missouri River Breaks National Monument.

The land at the proposed site is currently used for agricultural purposes; however, other industry currently operates in the surrounding area. Montana Refining Company is located approximately 2 miles away, Agri-Technology Corporation (formerly American Agri-Technology Operating, LLC) proposed to locate at a site approximately 3.8 miles away, Malmstrom Air Force Base is located approximately 4 miles away, numerous radio/television towers are nearby, and a bus "yard" is adjacent to the facility.

The facility would result in additional noise for the area. The noise impacts from this facility on the surrounding area would be minor because the noise from the facility is relatively quiet when compared to other common sources and the distance to the nearest residence is approximately ½ mile away. The near field sound pressure level (SPL) contribution from the GE-supplied equipment is guaranteed not to exceed 96 decibels (dBA) when measured 3 feet in the horizontal plane and at an elevation of 5 feet above machine baselines or personnel platforms with the equipment operating at base load. The far field SPL contribution is guaranteed not to exceed 67 dBA when measured at a distance of 400 feet from the nearest equipment and operated at the rated load. For reference, normal street noise is estimated to be approximately 70 dBA, and normal close-up conversation is estimated to be approximately 60 dBA. In addition, since noise impacts are minimized by distance, the fact that the nearest resident is approximately ½ mile (2640 feet) from the facility location would further minimize the impacts from this facility.

The area would also receive increased vehicle use as a result of the proposed project; however, the Department does not believe that the amount of vehicle trips in the area would increase substantially over the existing traffic in the area. The vehicles would likely use the existing roads in the area en route to the roads established as part of the actual facility. Visible emissions (whether the county's responsibility or NorthWestern's responsibility) would be limited to 20% opacity.

There would not be an increase in odors with the addition of this facility to the area because odors from the combustion of natural gas exist in negligible amounts and are only slightly perceptible, if at all. Currently, odors from the existing refinery are noticeable throughout the Great Falls area and would overwhelm any odors from the proposed facility.

F. Air Quality

The proposed NorthWestern project would result in minor air quality impacts because of the relatively low emissions of air pollutants and the good dispersion characteristics of the stack and the area. Emissions of $NO_x$, CO, PM, $PM_{10}$, VOC, and $SO_2$ would result from the proposed project. Air quality dispersion modeling (that factors in such parameters as wind speed, wind direction, atmospheric stability, stack temperature, stack emissions, etc.) was conducted for the facility by Bison Engineering, Inc., which demonstrates that the emission impacts from the proposed project would be well below the National Ambient Air Quality Standards (NAAQS) and the Montana Ambient Air Quality Standards (MAAQS). The modeling analyses were conducted using 5 complete years (all four seasons) of Great Falls ambient air quality surface and upper air data. The modeling inputs were based on the "worst case" emissions from the facility (38.0 lb/hr for CO and 50.0 lb/hr per turbine for $NO_x$). Up to 5,576 receptors were used to identify the potential impacts from the proposed project. The receptors extended approximately 3 miles in all directions. The receptor elevations were automatically calculated from Digital Elevation Model

(DEM) files. The air dispersion modeling analysis was independently reviewed by the Department.

NorthWestern submitted a modeling analysis of the emissions from the facility in comparison to the air quality significance levels. The air quality significance level is the threshold for determining whether or not the impacts from a source are significant enough to require a NAAQS or PSD increment analysis. Since the modeling impacts from NorthWestern did not exceed the air quality modeling significance levels, NorthWestern would not be considered a significant contributor to any exceedance of the NAAQS or MAAQS and was not required to conduct a NAAQS or PSD increment analysis. However, Bison Engineering submitted the NAAQS and PSD increment analyses were performed in addition to the air quality significance levels evaluation.

The NAAQS/MAAQS analysis demonstrated that the emissions from this facility would be below the ambient air quality standards. The NorthWestern impacts were compared with the MAAQS because the MAAQS are the same or more stringent than the NAAQS for the above pollutants and averaging times. The impacts from the NorthWestern project on the air quality in comparison to the ambient air quality standards is minor. The ambient air quality standards are designed to protect public health with an adequate margin of safety (primary standard) and promote public welfare (secondary standard).

In addition to the ambient air quality analysis, the Department requested and NorthWestern performed a $NO_x$ Class II PSD Increment Analysis, a $NO_x$ Class I PSD Increment Analysis, and a Great Falls CO Nonattainment Area Analysis. The results of the $NO_x$ Class II PSD Increment modeling analysis indicated that the NorthWestern facility, along with Montana Refining Company, Malmstrom Air Force Base, and Agri-Technology Corporation $NO_x$ consuming sources, would result in an annual $NO_x$ impact of 5.92 $\mu g/m^3$. The $NO_x$ PSD Class II Increment is 25 $\mu g/m^3$.

The results of the $NO_x$ Class I PSD Increment modeling analysis indicated that the highest impacts from the NorthWestern facility on a Class I area would occur at the boundary of the Gates of the Mountains Wilderness Area. The annual $NO_x$ modeled impact at the Gates of the Mountains Wilderness Area boundary was 0.0010 $\mu g/m^3$, and the $NO_x$ PSD Class I Increment is 2.5 $\mu g/m^3$.

A CO modeling analysis was conducted to determine the impact that this facility would have on the Great Falls CO nonattainment area. The 1-hour modeled CO impact from this facility on the CO nonattainment area was 9.12 $\mu g/m^3$ and the 8-hour modeled CO impact from this facility on the CO nonattainment area was 3.11 $\mu g/m^3$. The 1-hour and 8-hour CO air quality significance levels for the CO nonattainment area are 2000 $\mu g/m^3$ and 500 $\mu g/m^3$, respectively. Based on this analysis, the NorthWestern project would not significantly contribute to the CO nonattainment area.

Based on the "worst case" emissions from the facility, the facility would easily comply with the NAAQS, the MAAQS, the $NO_x$ Class II Increment, the $NO_x$ Class I Increment, and the CO Nonattainment Area significance levels. Not only would the facility comply with the previously described standards at worst case conditions, but also the facility would not operate in "worst case" mode for very long periods of time.

In addition to the modeling analyses, a BACT analysis was performed as part of the permit action. The conclusion of the BACT analysis is no additional control for $NO_x$. In this case, no additional control would include the use of dry low $NO_x$ burners because these burners are integral to the design of the General Electric Model PG7121EA turbines. The $NO_x$ emission limits in the permit are based on using the dry low $NO_x$ burners that are integral to the turbines. Based on the BACT analysis, no additional control is also the appropriate BACT determination for the emissions of CO, VOC, PM, and $PM_{10}$. However, NorthWestern proposed to install selective catalytic reduction units and a catalytic oxidizer to substantially reduce $NO_x$ and CO respectively. The results of the BACT analysis were factored into the modeling analysis.

Furthermore, NorthWestern requested limits within the permit to stay below the New Source Review permit thresholds. The permit would contain an annual emission limit of less than 100 tons per year for $NO_x$ and less than 100 tons per year for CO.

The operation of the NorthWestern facility would also result in emissions of HAPs and carbon dioxide ($CO_2$). A major facility for HAPs is defined as a stationary source that has the potential to emit more than 10 tons per year of any individual HAP or 25 tons per year of all HAPs combined. The highest individual emission rate of a HAP from this project would be 5.7 tons per year, and the combined emission rate of all HAPs from this project would be 10.2 tons per year. Not only is this source not considered a major source for HAPs, but any impact from HAPs would be minor because the emissions of the HAPs would be dispersed by the wind speed, wind direction, atmospheric stability, stack temperature, and other dispersion parameters in the area. Furthermore, the HAPs emissions would be small relative to the HAPs emissions already present in the area from vehicles, home heating, gas stations, and other industrial sources. The exposure from the HAPs emissions from this facility would be less than the exposure level that occurs while you are fueling a vehicle. The public's exposure to HAPs while fueling a vehicle would be much higher than that from the emissions from this facility because the emissions from NorthWestern would be emitted from a 120-feet tall stack at approximately 989°F. Due to the wind speed, wind direction, atmospheric stability, stack temperature, and other parameters, the emissions from the NorthWestern facility would greatly disperse (dilute) before creating impacts to the public.

Any impact from $CO_2$ would also be minor when compared to the $CO_2$ emissions from other industrial sources in the state and other natural sources of $CO_2$. In addition, there are no ambient air quality standards for HAPs or $CO_2$. $CO_2$, specifically, is not a regulated pollutant under the Federal or Montana Clean Air Acts. Power is generally created using either one of two fuels—natural gas or coal. Coal-fired power plants generate 1.8 times more $CO_2$ than a similar sized natural gas fired power plant.

The city annexation (sewer and water) portion of this project would result in very little air quality impact because no major air emission activities would be required. The sewer and water system upgrade may require the use of motor vehicles, but the impacts would be minor and of a short time duration. Similarly, minor fugitive dust emissions would result from the sewer and water system upgrade as well, but the emissions would be temporary.

G. Unique, Endangered, Fragile, or Limited Environmental Resources

To identify any species of special concern in the immediate area of the proposed project, the Department contacted the Montana Natural Heritage Program of the Natural Resource Information System (NRIS). The Natural Heritage Program files identified two species of special concern in the 1-mile buffer area surrounding the section, township, and range of the proposed facility. The two plant species identified were the *entosthodon rubiginosus* and the *funaria americana*. Both of these species are found on or near the Missouri River. The search results indicated that both of these plant species were previously recorded within a 5-mile radius (approximately 2 miles). The 5-mile radius does include a small portion of the Missouri River.

Based on the modeled air quality impacts from the NorthWestern facility, the NorthWestern proposal would have little, if any chance of impacting the unique, endangered, fragile, or limited environmental resources in the area. The modeling analysis results presented in Section 7.F of this EA indicate that the highest impacts from the air emissions from this facility would be minor. Furthermore, the plant species of special concern identified above are not located in the area with the highest impact. Due to the plume characteristics from the proposed facility, the emissions would predominantly be carried to the north and east of the facility, away from the location of the plant species of special concern.

The proposed project would have minor impacts on limited, non-renewable resources because the amount of natural gas consumed by the facility would be relatively small in comparison to the natural gas consumption in Montana and the nation. The 80 MW turbines would require approximately 16,469-million standard cubic feet (MMscf) of natural gas per year, and the two duct burners would require approximately 1200 MMscf of natural gas per year, for a total of 17,669 MMscf of natural gas per year. The natural gas would be obtained from gas fields in Canada.

H. Demands on Environmental Resource of Water, Air, and Energy

As described in Section 7.B of this EA, impacts to the water resource would be minor because the demands for water would be low and the resulting amount of waste water would be small. Furthermore, NorthWestern is not proposing to directly discharge any material to the surface or ground water in the area.

As described in Section 7.F of this EA, the impact on the air resource in the area of the facility would be minor because the air emissions from the facility are relatively low and the dispersion characteristics of the facility and area are very good. Ambient air modeling for $NO_x$, CO, VOC, PM, $PM_{10}$, and $SO_2$ was conducted for the facility at "worst case" conditions that demonstrates that the emissions from the proposed facility would not exceed any ambient air quality standard nor significantly contribute to the CO nonattainment area. As a result of the ambient air quality analysis presented in Section 7.F of the EA, Permit #3154-02 would contain conditions limiting the emissions from the facility.

The impacts to the energy resource from this facility would be minor because the facility would consume relatively small amounts of natural gas (approximately 17,669 MMscf/year) in comparison to the natural gas consumed nationally, and the facility would produce relatively small amounts of electrical power (approximately 262 MW) in comparison to the electrical power that is produced nationally. Furthermore, in comparison to other recently permitted similar sources in the nation, the natural gas consumption and electrical production are again, minor.

The city annexation (sewer and water) portion of this project would result in very little air quality impact because no major air emission activities would be required. The sewer and water system upgrade may require the use of motor vehicles, but the impacts would be minor and of a short time duration. Similarly, minor fugitive dust emissions would result from the sewer and water system upgrade as well, but the emissions would be temporary.

I. Historical and Archaeological Sites

The impacts on historical and archaeological sites would be minor because the site location contained no visible standing structures, the facility would physically impact a small amount of property (approximately 30 acres), the facility would locate within an area that has been plowed for agricultural purposes, and the site location is in an area that would likely not have been used for any significant historical or archaeological activity. The area of the actual construction contained no visible standing structures and has been thoroughly disturbed by agricultural activities (plowing). The lack of standing structures indicates lack of historical activity within the proposed site location. Since the topsoil in the area is 4-6 inches thick and covers glacial gravel, any possibility of historical or archaeological material being present was destroyed by the agricultural activities (plowing) in the area.

The physical location of the site also indicates that it was not likely a location for significant historical or archaeological activity. The site location is located in rolling terrain on the bench above the Missouri River. The nearest portion of the Missouri River to the site location is approximately 1.5 miles away, and the bluff is approximately 1.25 miles away from the site location.

The Department contacted the Montana Historical Society – State Historic Preservation Office (SHPO) in an effort to identify any historical, archaeological, or paleontological sites or findings near the proposed project. SHPO's records indicate that there are currently no previously recorded cultural properties within the project site. Because of the fact that severe agricultural activities have occurred in the area, the likelihood of finding undiscovered or unrecorded historical properties is practically nil.

In an effort to expand the cultural resource inventories available in the state, SHPO recommended that a cultural resource inventory be conducted prior to the construction. SHPO did not identify that they had concern that historical, archaeological, or paleontological sites were present on the site. In fact, numerous other structures have been constructed in the immediate area of the facility with no identification of historical or archaeological artifacts to SHPO. Neither the Department nor SHPO has the authority to require a cultural resource inventory for this project.
The city annexation (sewer and water) portion of this project would result in no impact on historical or archaeological sites because the disturbances would occur within previously disturbed sites, and the sites that are not previously disturbed would be in the same area as previously described in this section.

J. Cumulative and Secondary Impacts

Overall, the cumulative and secondary impacts from this project on the physical and biological aspects of the human environment would be minor because the overall air impact from NorthWestern in addition to the other Great Falls industrial sources is small, the highest impacts from each of the other nearby industrial sources (Montana Refining Company, Malmstrom Air Force Base, and Agri-Technology Corporation) does not occur at the same receptor, and the pollutant of concern for each of the nearby industries is generally different. In addition, emissions from the nearby sources that were previously mentioned were included in the $NO_x$ Class II PSD increment modeling performed by NorthWestern at the request of the Department. The modeling analysis indicated that the cumulative emissions from these facilities would not violate the $NO_x$ Class II PSD increment.

Since the issuance of Permit #3154-00 for NorthWestern, Agri-Technology Corporation submitted an application on July 23, 2001, to increase the size of the ethanol plant that they are currently permitted to construct and operate. Since the submittal was received so late in the permit review process for NorthWestern, only those emissions from Agri-Technology Corporation that are currently accounted for in a permit (#2835-02) were included in the analysis. The application from Agri-Technology Corporation is currently under review by the Department, EPA, the United States Forest Service, and the National Park Service. Agri-Technology Corporation is required to complete a modeling demonstration to show that their proposal would not cause or contribute to a violation of any ambient air quality standard or significantly affect the CO nonattainment area. In addition, since the proposal by Agri-Technology Corporation is subject to the Prevention of Significant Deterioration program, additional analyses beyond those done for NorthWestern, such as an Air Quality Related Values (AQRV) analysis, increment consumption analysis, and additional analyses for deposition are required for their project. Furthermore, the Agri-Technology Corporation project would be required to go through the MEPA process during the preconstruction permitting process. The permit process for Agri-Technology Corporation would ensure that there would not be a significant air quality impact from Agri-Technology Corporation in conjunction with the other facilities in the area.

8. The following table summarizes the potential social and economic effects of the proposed project on the human environment. The "no action" alternative was discussed previously.

| Potential Social and Economic Effects | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Major | Moderate | Minor | None | Unknown | Comments Included |
| A. | Social Structures and Mores | | | | X | | yes |
| B. | Cultural Uniqueness and Diversity | | | | X | | yes |
| C. | Local and State Tax Base and Tax Revenue | | | X | | | yes |
| D. | Agricultural or Industrial Production | | | X | | | yes |
| E. | Human Health | | | X | | | yes |
| F. | Access to and Quality of Recreational and Wilderness Activities | | | X | | | yes |
| G. | Quantity and Distribution of Employment | | | X | | | yes |
| H. | Distribution of Population | | | | X | | yes |
| I. | Demands for Government Services | | | X | | | yes |
| J. | Industrial and Commercial Activity | | | X | | | yes |
| K. | Locally Adopted Environmental Plans and Goals | | | | X | | yes |
| L. | Cumulative and Secondary Impacts | | | X | | | yes |

SUMMARY OF COMMENTS ON POTENTIAL SOCIAL AND ECONOMIC EFFECTS: The following comments have been prepared by the Department.

A. Social Structures and Mores

The proposed facility would not cause a disruption to any native or traditional lifestyles or communities (social structures or mores) in the area because the land use proposal would not be out of place given the land use of the larger area surrounding the proposed site and the fact that the immediate surrounding area would remain agricultural. The addition of the NorthWestern facility would be consistent with the current use of the larger area surrounding the facility. Besides the agricultural properties near the facility, there are other industrial sources, such as Montana Refining Company, Malmstrom Air Force Base, and Agri-Technology Corporation, in the greater surrounding area.

As described in Section 8.D, the remainder of the NorthWestern property may return to agricultural production. So, of the 330 acres owned by NorthWestern, approximately 300 acres may return to agricultural production.

The other portion of the project (annexation of the facility) would have no impact on social structures and mores because these associated activities are not new to Montana or the specific areas of impact. Most of the impacts from the other portions of the project would occur within previously disturbed sites that are already conducting the desired activity, but just need improvements or upgrades.

B. Cultural Uniqueness and Diversity

The proposed facility would not cause a change in the cultural uniqueness and diversity of the area because the area is currently used predominantly for agricultural purposes. Even with the addition of NorthWestern to the area, the area would still be used predominantly for agricultural purposes. As

described in Section 8.D, the majority of NorthWestern's property may also be returned to agricultural use.
Besides the agricultural properties near the facility, industrial activity is not "out of place" given the larger Great Falls area. Other industrial sources, such as Montana Refining Company, Malmstrom Air Force Base, and Agri-Technology Corporation, operate in the greater surrounding area of the proposed site location.

The other portion of the project (annexation of the facility) would have no impact on cultural uniqueness and diversity because the land use of the area(s) would not be changing.

C. Local and State Tax Base and Tax Revenue

The facility would have a minor effect on the local and state tax base and tax revenue because it would generate approximately $2.5 million dollars per year in state and local taxes, would generate taxes for approximately 25 years (including the 5-year tax holiday), and would employ numerous people (taxpayers) during construction and approximately 15 people after completion. The NorthWestern project would be privately funded. The facility would result in approximately 15 permanent new employment positions and may be annexed into the City of Great Falls. Cascade County officials submitted information during the public comment period for Permit #3154-00 that indicated an additional $2.5 million dollars in new state and local property taxes would result from the facility. The collection of the $2.5 million dollars in property taxes would begin after a statutory 5-year tax holiday. Of the $2.5 million dollars, the local tax benefits would include $422,000 per year for Cascade County, $425,000 per year for the City of Great Falls, and $800,000 per year for Great Falls Public Schools. Also noted in the correspondence from Cascade County was the fact that the power plant would pay high taxes while requiring fewer than average services.

Comments were received during the public draft stage for Permit #3154-00 questioning why the citizens of Great Falls and Montana should have to subsidize the taxes forfeited during the 5-year tax holiday. In response to this comment, the Department contacted the Department of Revenue and found out that the citizens of Montana would not be subsidizing the taxes forfeited during this period. Furthermore, the tax benefit from the proposed facility outweighs the forfeited taxes during the tax holiday by a substantial margin. According to NorthWestern officials, the business plan for this facility is based on operating 25-30 years.

Comments were also received during the public draft stage for Permit #3154-00 that questioned the impact this facility would have on property values in the area. The proposed plant would be located approximately ½ mile (2640 feet) from the nearest residence and should not be aesthetically obtrusive. Other factors that are traditionally associated with a decrease in property values such as odors, fumes, or significant increases in traffic, dust, vibration, or noise would not be present at this location. In addition, an appraisal of individual tracts is beyond the scope of environmental analysis required by the Montana Environmental Policy Act.

D. Agricultural or Industrial Production

The impacts to agricultural and industrial production in the area from this facility would be minor because the facility would physically impact such a small amount of land, the impact from the air emissions on the land would be small, and the amount of electricity produced to assist other industrial activities within the state is relatively small. NorthWestern purchased approximately 330 acres of agricultural property to facilitate the power plant. The facility would be located approximately in the middle of the 330 acres, and the immediate area surrounding the facility would be fenced. Only that area within the fence (approximately 30 acres) would be physically impacted, and those impacts would be minor. According to NorthWestern, a final decision has not been made as to the future use of their property outside the facility boundary. However, NorthWestern characterized the probability as "likely" that the surrounding property would be leased or sold for agricultural or other purposes. NorthWestern states that it has no plans for using this additional acreage for any other industrial activity associated with the power generation

project.
As described in Section 7.F of the EA, the air quality impacts from this facility are minor, and the resulting deposition of the pollutants from the NorthWestern project is consequently also minor. In addition, as described in Section 7.F, the fact that the facility would comply with the NAAQS (protect public health and promote public welfare) indicates that the impacts from the facility would be minor.

The NorthWestern facility may assist other industrial production because information submitted as part of the application indicated that two-thirds of the power (175 MW) would be available to Montana sources to potentially assist with industrial production. In comparison to the power demands of industrial sources within Montana, the amount of power available to the industrial sources is relatively small.

The other portion of the project (annexation of the facility) would have little, if any impact on agricultural production because the disturbance for most of the activities would be within previously disturbed locations and the disturbances at other locations (addition of utilities during annexation) would be minor and not change the predominant setting of the area.

E. Human Health

As described in Section 7.F of the EA, the impacts from this facility on human health would be minor because the impact from the air emissions would be greatly dispersed before reaching an elevation where humans were exposed. Also, as described in Section 7.F, the modeled impacts from this facility, taking into account other dispersion characteristics (wind speed, wind direction, atmospheric stability, stack height, stack temperature, etc.), are low and are well below the MAAQS and the NAAQS. The air quality permit for this facility incorporates conditions to ensure that the facility would be operated in compliance with all applicable rules and standards. These rules and standards are designed to be protective of human health.

Besides the criteria pollutants, the impacts from all other air pollutants ($CO_2$, $NO_2$, and HAPs) would also be greatly minimized by the dispersion characteristics of the facility and the area (wind speed, wind direction, atmospheric stability, stack temperature, facility emissions, etc.). Impacts from other common activities (such as fueling your vehicle for example) would have a greater impact on human health for HAPs because of the concentrations at the point of exposure.

F. Access to and Quality of Recreational and Wilderness Activities

The facility would result in a minor impact on the access to and quality of recreational and wilderness activities because the air emissions from the facility are relatively small and would disperse before impacting the recreational areas (see Section 7.F of EA), the recreational activities in the area are approximately 1½ to 2 miles away, and most of the nearby recreational activities are upwind of the predominant wind pattern. Furthermore, NorthWestern purchased approximately 330 acres of private property for the installation of the power plant. The property will continue to be private. No significant recreational or wilderness activities exist within the NorthWestern property boundaries.

Recreational activities exist in the area surrounding the proposed site location. The closest recreational opportunities appear to be the Anaconda Hills Golf Course (closest point approximately 0.7 miles), the Rivers Edge Trail (closest point approximately 1.4 miles), Giant Springs Heritage State Park (approximately 1.9 miles), the Missouri River (closest point approximately 1.4 miles), the North Shore Conservation Easement Lands, Black Eagle Dam, Rainbow Dam, Cochrane Dam, Ryan Dam, and Morony Dam. Based on the modeling analysis performed for the NorthWestern project (see Section 7.F of the EA) and the distance between and direction from the recreational sites and the NorthWestern project site, the impacts to the previously mentioned recreational opportunities and other recreational opportunities in the area would be minor, if any at all.

The Department also received comments during the public comment period for Permit #3154-00 regarding the Upper Missouri River Breaks National Monument. According to the Bureau of Land Management's web-site, the center of this monument is the 149-mile long Upper Missouri National Wild and Scenic River. The Upper Missouri River begins at historic Fort Benton, Montana on U.S. Highway 87 and ends 149 miles downstream where the Fred Robinson Bridge on U.S. Highway 191 crosses the Missouri River. Fort Benton is approximately 36 miles from the site location of the proposed NorthWestern power plant. The NorthWestern project would not affect the Upper Missouri River Breaks National Monument.

The annexation of the facility would have no impact on recreational and wilderness activities because the areas of disturbance are currently not sites for these type of activities and because most of the impacts would be temporary.

G. Quantity and Distribution of Employment

There would be a minor effect on the employment of the area from this project because it would result in numerous construction-related employment opportunities and approximately 15 full-time positions. NorthWestern estimates that approximately 100 employees would be needed for the construction of the facility. Upon completion, the normal operation of the power plant would employ approximately 15 people, full-time.

When feasible and economical, NorthWestern plans on using local contractors and workers for construction and operation. The feasibility would be dependent on availability and qualifications. As far as economical, NorthWestern contends that the lowest cost contractors would have the best chance of being utilized.

A few temporary employment opportunities would result from the other portion of the project (annexation of the facility). The sewer and water system upgrades would require some construction and corresponding man-hours. However, the impacts on quantity and distribution of employment would be minor because the required work would be temporary and would likely be handled by current employees of the City of Great Falls.

H. Distribution of Population

The entire project would not affect the normal population distribution in the area because, excluding the 15 full-time positions that would result from the power plant, the remainder of the jobs created from this project would be temporary. Neither the 15 full-time positions nor the numerous temporary construction-related positions would likely affect the distribution of population in the area.

Most employees required for the construction and operation of the power plant would likely be from Great Falls or temporarily locate within Great Falls since housing would be easier to locate. For the other construction related activities with this project, the employees would likely be existing staff in the area and would likely not be moving to Great Falls.

I. Demands of Government Services

Demands on government services from this facility would be minor because, as described in the letter from Cascade County, the facility would pay relatively high taxes and require fewer than average government services. Minor increases may be seen in traffic on existing roads in the area while the facility is operating. However, since the facility would be annexed into the City of Great Falls as part of the project, other improvements by the City of Great Falls may be required. All water for the facility would be obtained from the Great Falls municipal water supply, and all spent water would be discharged to the Great Falls city sewer.

The acquisition of the appropriate permits by the facility, the permits for the associated activities of the project, and compliance verification with those permits would also require minor services from the government.

J. Industrial and Commercial Activity

The NorthWestern facility would represent a minor increase in industrial activity in the area. The facility would operate 24 hours a day and 7 days per week generating electricity. Some of the other permitted facilities in the area are Montana Refining Company, Agri-Technology Corporation, and Malmstrom Air Force Base.

K. Locally Adopted Environmental Plans and Goals

The City of Great Falls contains a nonattainment area for CO along 10th Avenue South. However, the proposed facility is outside of the nonattainment area and would result in only minor impacts to the nonattainment area because the CO emissions from the facility have been modeled to demonstrate that the impacts would not significantly contribute to the CO nonattainment area. In addition, the modeling inputs were based on the "worst case" CO emissions from the facility. Not only would the facility seldom operate at "worst case" conditions, but the prevailing wind pattern in the area would carry the emissions from the facility to the north and east of the plant, away from the nonattainment area.

The Department is unaware of any other locally adopted environmental plans and goals that would be affected by the facility or the other portions of the project as identified at the beginning of this EA.

L. Cumulative and Secondary Impacts

Overall, the cumulative and secondary impacts from this project on the social and economic aspects of the human environment would be minor because several new full-time employment opportunities would result, many construction related employment opportunities would be available, and the facility would sell reasonably priced power to other residents and industries in Montana.

The NorthWestern project would result in additional jobs for the Great Falls area. As described in Section 8.G of this EA, the facility would employ approximately 15 full-time people and approximately 100 people during the construction phase. The "day-to-day" normal operation positions and the construction-related positions created by the NorthWestern project would bring additional money into the Great Falls economy.

*Recommendation*: An EIS is not required.

*If an EIS is not required, explain why the EA is an appropriate level of analysis*: All potential effects resulting from construction and operation of the proposed facility are minor, therefore, an EIS is not rrequired. In addition, the source would be applying the Best Available Control Technology and the analysis indicates compliance with all applicable air quality rules and regulations.

*Other groups or agencies contacted or which may have overlapping jurisdiction*: Department of Environmental Quality – Permitting and Compliance Division (Air and Waste Management Bureau); Montana Natural Heritage Program; and State Historic Preservation Office (Montana Historical Society).

*Individuals or groups contributing to this EA*: Department of Environmental Quality (Air and Waste Management Bureau and Water Quality Bureau) Montana Natural Heritage Program, and State Historic Preservation Office (Montana Historical Society).

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